Polyacrylamide Medium for the Electrophoretic Separation of Biomolecules

Abstract

A polyacryalmide medium for the electrophoretic separation of biomolecules. The polyacryalmide medium comprises high molecular weight polyacrylamides (PAAm) having a viscosity average molecular weight (M.sub.v) of about 675-725 kDa were synthesized by conventional red-ox polymerization technique. Using this separation medium, capillary electrophoresis of BigDye DNA sequencing standard was performed. A single base resolution of about 725 bases was achieved in about 60 minute in a non-covalently coated capillary of 50 mu.m i.d., 40 cm effective length, and a filed of 160 V/cm at 40°C. The resolution achieved with this formulation to separate DNA under identical conditions is much superior (725 bases vs. 625 bases) and faster (60 min. vs. 75 min.) to the commercially available PAAm, such as supplied by Amersham. The formulation method employed here to synthesize PAAm is straight-forward, simple and does not require cumbersome methods such as emulsion polymerizaiton in order to achieve very high molecular weights. Also, the formulation here does not require separation of PAAm from the reaction mixture prior to reconstituting the polymer to a final concentration. Furthermore, the formulation here is prepared from a single average mol. wt. PAAm as opposed to the mixture of two different average mol. wt. PAAm previously required to achieve high resolution.

Patent

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